phonetic nomenclature. Thirty-six vowel sounds are developed by labial modifications of sounds produced with definite positions of the tongue and certain size of the cavity of the mouth. The cause of the differences between vowels and consonants is explained, and the mechanism of distinct utterance is expounded. Teachers of languages and elocution may find the book of service for instructing their pupils how to arrange the tongue and lips in order to speak with correct accent.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Bipedal Locomotion among Existing Reptiles.

I COMMUNICATED to NATURE of February 27, 1896, and elsewhere, details with accompanying figures concerning the bipedal locomotion of the North Australian Frilled Lizard *Chlamydosaurus Kingi*, and which, with reference to such method of progression, apparently occupied a unique position among existing reptilia. As the result of a more recent investigation, I have discovered that a corresponding bipedal gait is assumed under favourable conditions—*i.e.* when running across a wide expanse of smooth and level ground—by the handsome Australian water lizard, *Physignathus Lesseuri*, such method of progress being most conspicuously manifested by the young and slender individuals. I have also ascertained that a similar mode of locomotion is adopted under like conditions by *Amphibolurus muricatus*, and I am inclined to anticipate that it will be found to obtain among many other of the Australian, and possibly African, Agamoid lizards that share with the foregoing species a relatively excessive development of the hinder limbs.

A like bipedal formula of locomotion has been hinted at, though not yet demonstrated, in the case of the Mexican Iguanoid, *Corythophanes Hernandesyi*, and will possibly be found to be shared by many allied members of the same family that present in common with it a corresponding superficial structural parallelism with the typical Australian Agamidæ. The discovery here recorded is submitted with the main object of indicating that the bipedal locomotion of Chlamydosaurus can no longer be regarded as a mere specific idiosyncrasy. The fact of its being shared by other widely differing members of the same Agamoid group, together with the circumstance of, as in the case of Physignathus, its being most prominently manifested in young individuals, would appear to indicate that the habit has been inherited from a race that possessed yet more essentially bipedal progressing proclivities. Reserving fuller details for a future communication. W. SAVILLE-KENT.

Wallington, Surrey, July 18.

Sensitiveness of the Retina to X-Rays.

Is it not possible that the persistence of an image on the retina is due to phosphorescence? This would at once explain the sensitiveness of the retina to X-rays.

The curious phenomenon of the image moving in the opposite direction, observed by Mr. Harrison (p. 248), is no doubt due to the rays passing through the lens without being refracted; the effect of the image becoming larger, is also the result of the same cause. All objects to become visible must, therefore, be smaller than the retina. ERNEST BRAUN.

42 Henslowe Road, East Dulwich.

Sample-Post for Natural History Specimens.

IN the issue of NATURE for June 17 (p. 159) it is stated that, at the recent Postal Congress held at Washington, it was decided that natural history specimens, not sent for commercial purposes, were to be permitted to pass by Sample Post between the countries of the Postal Union.

Permit me to mention that I have been informed by the Secretary to the Post Office, that the Convention giving effect to that decision does not come into operation until January 1, 1899. WALTER F. H. BLANDFORD.

July 15.

AUSTRALIAN NATURAL HISTORY.[1]

WHETHER designed or accidental, it is a fortunate circumstance that this sumptuous volume—a real *édition de luxe*—makes its appearance at a time when the most remote portions of the British Empire are being brought into closer connection with the mother country. At such a time everything that tends to promote a more intimate knowledge of the natural products of our colonial dependencies deserves a hearty welcome at the hands of all interested in the expansion and unification of the greatest empire the world has ever seen. On these grounds, to say nothing of others, Mr. Saville-Kent and his enterprising publishers are to be congratulated on the appearance of the work before us. As an attractive volume for the drawing-room table, it would be hard to equal anywhere; the beauty of its illustrations, whether in the form of coloured plates or of collotypes, being above praise, and calculated to arrest the attention of many of those who have hitherto cared little or nothing for the products of tropical and subtropical nature. Indeed, the two chromos of coral-reefs at low water, one of which forms the frontispiece, while the other illustrates the chapter on Houtman's Abrolhos, may well make every reader long for the opportunity of beholding scenes of such transcendent loveliness.

For the production of such a work the author is fortunately gifted with endowments denied to many of his fellow naturalists, for, as we learn from the legends to the chromos, he is not only an accomplished artist with the brush and pencil, but diligent practice has made him no less successful with the camera. And as a consequence of this, one of the striking features of the work is a series of life-like portraits of many Australian animals in attitudes as unlike those given in ordinary natural history books as it is possible to conceive; the one being nature, while the others are but too often death caricatured. What, for instance, can be better than the picture of Spinous Lizards with the curious expansions on the neck on p. 84, reproduced on the next page, by the courtesy of the publishers? (Fig. 1). It is, however, not only with animate nature that Mr. Kent has been successful, his views of scenery, especially where the wonderful termite mounds are concerned, being admirable works of art, interesting alike to the lover of strange landscapes and to the naturalist.

As may be gathered from his preface, the design of the author was not to produce a systematic work on the fauna and flora of Australia—of which we have plenty—but "to present to the English reading public a few glimpses" of its natural products, with special attention to the habits of some of the more interesting animals. In this laudable object he has, on the whole, succeeded admirably; and although his primary object has not been to attract the professed naturalist, many of his observations—notably those on the use of the leg-spur of the Duckbill—are of the highest importance to all students of natural history.

Not that Mr. Kent treats many parts of his subjects in a superficial, or even what may be termed a purely popular manner. We have, for example, in the introductory chapter a long dissertation on the relation of Australasia to other countries of the southern hemisphere, which may possibly be above the heads of some of his readers. In this we note that he adopts the view that Australasia, Africa, and South America have been in mutual connection at no very remote epoch; but in giving his adhesion to the theory that such connection took place solely by means of an Antarctic continent completely cut off from more northern lands, he has evidently not studied some of the more recent literature on this fascinating but difficult subject. And we should much like to know how he reconciles this assumed southern origin of the marsupial fauna with the occurrence of opossums in the European Oligocene. He is also not quite up to date with regard to the extent or affinities of some of the groups of the southern fauna. For instance, on p. 4, we find no mention of the fact that *Galaxias* is represented at the Cape ; while, from a statement two pages later, the author appears to be unaware that the giant extinct birds of Patagonia have no sort of relationship with the Ostrich group. Then, again, we must take exception to the statement on p. 15, that the Australian fauna comprises only "a few rodents" ; while we should like to be informed whether, in face of the views of Mr. Douglas Ogilby, he has any special reason for the statement that "there is strong reason to believe" the Dingo "was introduced by human agency." Although it is perhaps invidious to call attention to slight slips in a work of this nature, it is difficult to avoid asking why Señor Ameghino is credited on p. 20 with writing in the "Brazilian" *Bulletin of the Academy of Cordova;* to which it may be added that the voluminous writer referred to has had a good deal to say on the same subject since 1894.

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[1] "The Naturalist in Australia." By W. Saville-Kent. 4to. Pp. xv + 302. (London: Chapman and Hall, Ltd., 1897.)

After treating in the introductory chapter of the leading types of Australian mammals, some of which are admirably illustrated, and a few of the birds, in the second chapter the author describes in detail the manners and appearance of some of the more notable species among the latter. And here his photographs of the "More-pork" (*Podargus*) and "Laughing-jackass" (*Dacelo*) are almost speaking likenesses. Something, however, might well have been added with regard to that very characteristic Australian bird, the Piping-crow (*Gymnorhina*), which appears to be only incidentally mentioned on p. 52. Following birds, the third chapter is naturally devoted to lizards, where the author's illustrations of the extraordinary attitudes assumed by the frilled lizard (*Chlamydosaurus*), previously published in the Zoological Society's *Proceedings* and in NATURE, are reproduced. Although it is less apparent than before, it is to be regretted that the author cannot thoroughly purge himself of the idea that the erect attitude of this creature has something to do with Dinosaurian ancestry ; and it would have been much better if all reference to the structure of *Compsognathus*, about which the general public knows nothing and cares less, had been omitted. After lizards we look in vain for snakes, and we should have expected fishes in juxtaposition. These latter are, however, treated of in the sixth chapter, where Mr. Kent, with twelve years' experience as inspector of fisheries in "Westralia," speaks with authority. We are here introduced to a number of piscine types unfamiliar to the European, some remarkable for their size and peculiar structure, while others, like the Coral-fishes, to which a coloured plate is devoted, claim attention from their brilliant hues and grotesque forms. It is, however, by no means the largest or the best-flavoured fish that are of the most commercial value. "From a utilitarian point of view," writes the author, "the Barracouta (*Thyrsites*) is undoubtedly one of the, if not the, most important of the Tasmanian food-fishes. While the real or Hobart Trumpeter may be said to typify the species fitted, like the Turbot, to grace the table of the wealthy, the Barracouta may be as essentially styled the poor man's fish. It takes in Tasmania the place that is occupied by the modest Herring or the Haddock in the English market."

Turning back to chapter iv., we find this devoted to White Ants, or Termites, and the marvellous size and form to which they raise their mounds in certain parts of the country. Indeed, so numerous and so large are these mounds, that they frequently form an important feature in the landscape, as is well shown in several of the illustrations, one of which we are able to give (Fig. 2).

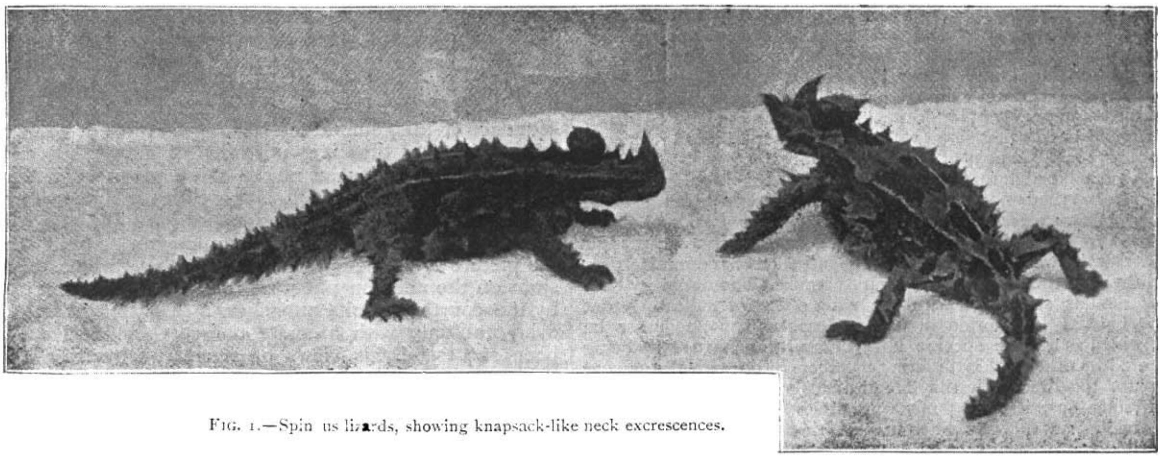

FIG. 1.—Spinous lizards, showing knapsack-like neck excrescences.

Perhaps the most fascinating chapter in the book is the one (v.) describing Houtman's Abrolhos, those low-lying coral islands situated off Western Australia, so interesting to the historian as being the scene of the wreck of the Batavian expedition of 1629, which led to the discovery of Australia, and to the naturalist as forming the border line between a tropical and temperate fauna. Nowhere else, we are told, are such extensive sheets of one and the same species of coral to be met with as here. Of the reef corals, the author writes that "while growing very near to the surface level of the water at low ebb tide, they very rarely appear above it, and then to the extent of a few inches only." And it is well for them that this is so, since the author relates how on one cold winter morning he found the tips of the madrepores that had been thus exposed, completely killed, indicating, in spite of their luxuriant growth, that we are near the limits suitable for coral existence. Much interest attaches to the author's description and illustration of "the birth of a coral island," but for this and the description of the coral reefs themselves, we must refer our readers to the original. Pearls and pearl-fishing, although intimately connected with coral reefs, are treated of in chapter vii. in a manner adequate to the importance of such a valuable trade ; and the reader will there learn how the fishery has been gradually driven by exhaustion from the shallows to deeper and deeper water, while the complexity of the plant required for its successful prosecution has concomitantly increased. To replenish the waste, artificial cultivation of the pearl-oyster has been tried in various localities; and of all these, the author considers that the islands of Torres Straits are the most likely to yield successful results.

The last three chapters, respectively entitled "Marine Miscellanea," "Insect Oddities," and "Vegetable Vagaries," we are reluctantly compelled to pass by without mention, although all merit the reader's best attention. Were our notice extended to three times its length, even then but comparatively few of the more interesting points in this volume could be touched upon; but as it is, enough has been said to indicate how well the author has made use of his exceptional opportunites of observation, and in what an attractive guise he has presented his results to the public. R. L.

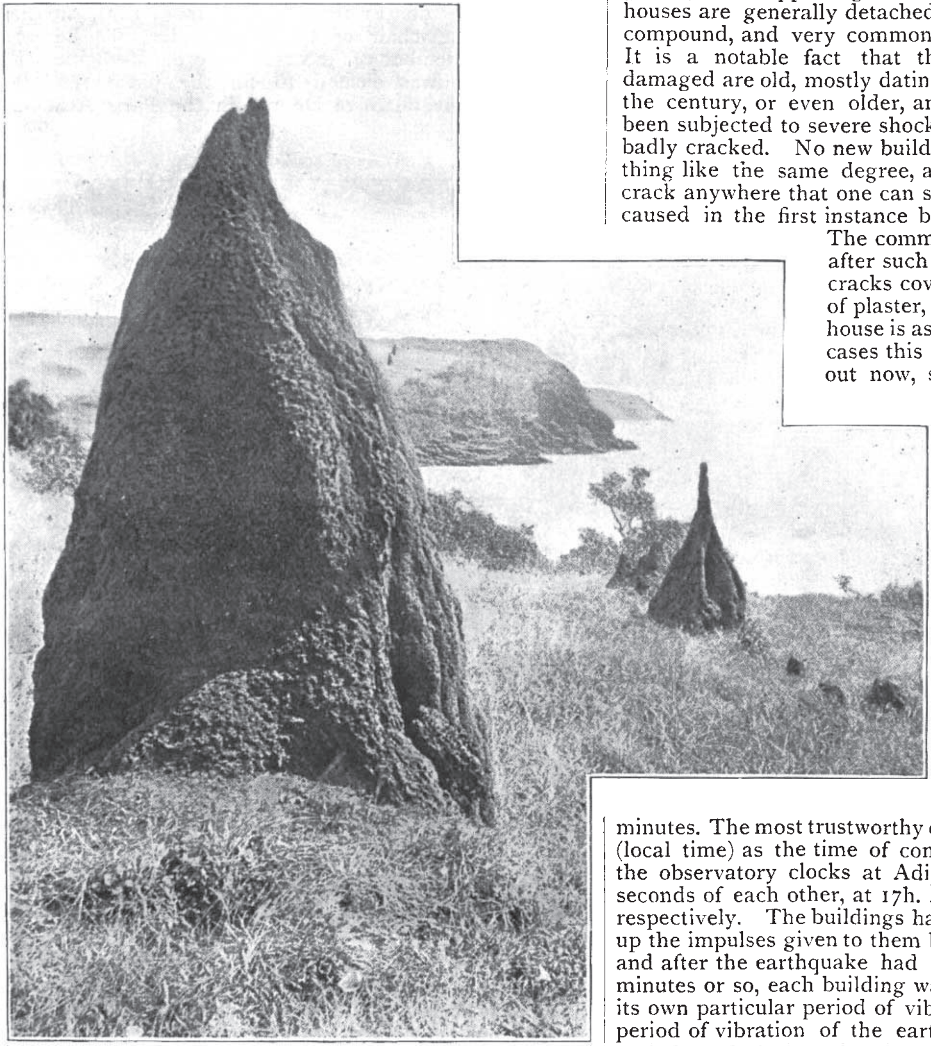

FIG. 2.—Termite mounds, Albany, North Queensland.

THE CALCUTTA EARTHQUAKE.

ON Saturday, June 12, at almost precisely five o'clock in the afternoon, Calcutta was visited by a somewhat severe shock of earthquake, most sensational reports of which, judging from the accounts that have appeared in the Indian papers, were probably telegraphed to England, and must have caused considerable anxiety among those who have relatives or friends out here. As a matter of fact few lives were lost, the warning given by the preliminary tremors allowing every one ample time to escape from their tottering dwellings, while in the crowded native quarters of the city the damage done is remarkably slight, the European quarter having suffered most. This apparent partiality of the shock is not, I think, to be attributed to any difference in its severity over the two areas, but rather to differences of construction and environment of the buildings. In the native town the houses are, as a rule, low, and built close together, thus supporting each other, while the European houses are generally detached, each standing in its own compound, and very commonly three stories in height. It is a notable fact that the only buildings greatly damaged are old, mostly dating back to the beginning of the century, or even older, and that they have already been subjected to severe shocks of earthquake, and were badly cracked. No new buildings have suffered in anything like the same degree, and it is difficult to find a crack anywhere that one can safely assume to have been caused in the first instance by the present earthquake. The common practice of the owners, after such a visitation, is to have the cracks covered up by a thick coating of plaster, so that to all appearance a house is as sound as before. In many cases this practice is being followed out now, so that there is every prospect of the next earthquake being attended with still more disastrous results.

In addition to the faulty construction of the buildings just mentioned, the damage caused must be attributed to the duration of the earthquake, rather than to any inherent severity of the shock itself. Various estimates are given as to the duration of the shock, ranging from four to ten minutes, and it must have lasted at least six minutes. The most trustworthy observations give 16h. 58m. (local time) as the time of commencement, while two of the observatory clocks at Adipur stopped, within a few seconds of each other, at 17h. 4m. 22s. and 17h. 4m. 26s. respectively. The buildings had thus ample time to take up the impulses given to them by the vibration of the soil, and after the earthquake had continued for a couple of minutes or so, each building was rocking to and fro with its own particular period of vibration, irrespective of the period of vibration of the earth, which I do not think varied much during the time it lasted. I happened to be on the third story of a new building, which was not damaged, at the time of the earthquake, and it seemed to me (and my observation has been confirmed by others to whom I have spoken on the subject) that distinct nodes were perceptible, during which, presumably, the vibrations of the house and those of the earth interfered with each other, and it is to the twisting effect produced by the presence of these nodes that I would attribute most of the damage done. It is curious that not a single factory chimney was overturned, or even cracked, though the chimneys rocked violently from side to side; their rate of vibration probably synchronised more or less with that of the earth. On the other hand, three, at least, of the church spires have broken off near the top; but in